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Look Out for the Pink Hibiscus Mealybug

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Figure 1—Saman tree killed by heavy PHM infestation. White PHM egg masses cover the trunk and branches.

The pink hibiscus mealybug (PHM)—*Maconellicoccus hirsutus* (Green)—is a serious new threat to U.S. agriculture. It attacks more than 200 plants (fig. 1), including beans, chrysanthemum, citrus, coconut, coffee, cotton, corn, croton, cucumber, grape, guava, hibiscus, peanuts, pumpkin, rose, and mulberry. This pest is presently established in central and northern Africa, India, Pakistan, northern Australia, and southeastern Asia. But it has recently arrived in tropical areas in the Western Hemisphere.

Since it arrived in Grenada in 1994, the PHM has spread to Guyana in South America and at least 14 other Caribbean islands: St. Thomas, St. John, and St. Croix in the U.S. Virgin Islands; Vieques in Puerto Rico; Tortola in the British Virgin Islands; and St. Martin, St. Eustatius, St. Kitts, Nevis, Anguilla, Antigua, Ste. Lucia, St. Vincent, and Trinidad and Tobago. Eventually, this mealybug will spread to the continental United States. The job of keeping this exotic pest out of the country is the responsibility of the Plant Protection and Quarantine branch of the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS).



Figure 2—Infested hibiscus twig (above) and hibiscus shrub (below).



Identification

Positive identification of the PHM requires a professional entomologist. Heavy cottonlike, white, waxy buildup on the terminals, stems, and branches of infested host plants may indicate a severe mealybug infestation (fig. 2).

The adult female (fig. 3) is about 3 mm long and wingless with white, flocculent wax covering the dorsal surface. It has two short, inconspicuous caudal filaments and no lateral wax filaments. The female's body and body fluid are both reddish. The female secretes a white cottonlike egg mass, irregular in shape, and lays from 300 to 600 pink eggs inside (fig. 4). First-instar nymphs, or pink crawlers, emerge from the eggs. When the egg mass is teased open, the pink eggs and crawlers are exposed and easily seen. In tropical climates, it takes about 30 days to complete 1 generation.



Figure 3—Adult female (arrow) and immatures.



Figure 4—
Pink eggs in an
egg mass.



Figure 5—Adult male.

Smaller than the female mealybugs, adult males are reddish brown and have one pair of wings and two long wax caudal filaments (fig. 5). The males have nonfunctional mouthparts. Males do not feed and live for only a few days. Unmated females produce a sex pheromone (an attractant scent) that lures PHM males for mating.

Damage

The PHM sucks juices from its host plant and injects a toxic saliva as it feeds. This process leads to the malformation of leaves and fruit, as well as stunted leaves and terminal growth, which is commonly called “bunchy top” (fig. 6). This mealybug’s feeding can also lead directly to the death of its host.

The PHM may be spread naturally by wind, birds, and other wildlife, or by people moving infested plant material to noninfested areas.

Economic losses exceed \$3.5 million a year in Grenada and \$125 million a year in Trinidad and Tobago.

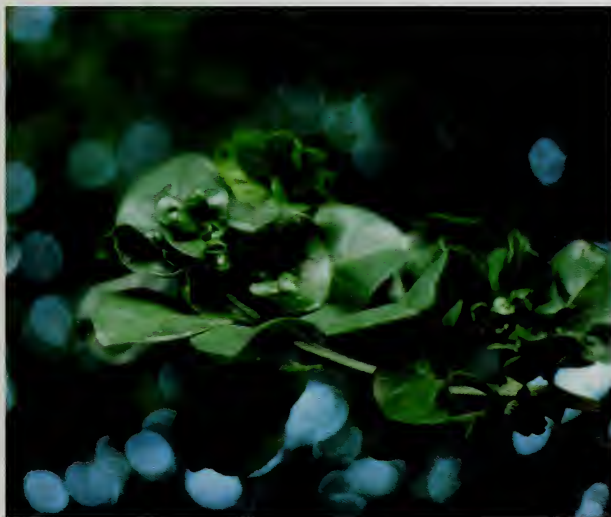


Figure 6—“Bunchy top” in citrus.

Conventional Control Measures

What Doesn't Work

Pesticides cannot easily penetrate the heavy wax layers on the PHM's body. Therefore, applying pesticides is an ineffective control technique against this mealybug species. Cutting and burning host material, which was tried on the islands of Grenada and Trinidad and Tobago, also had little impact on the spread of the PHM.

Biological Control

Biological control is the use of natural enemies (parasites and predators) against pest organisms to reduce their population densities. Because no natural enemies exist to attack this newly arrived mealybug species in the Caribbean, it is thriving and spreading rapidly. But scientists believe that parasites and predators imported from the PHM's homeland can keep its populations in check in the Western Hemisphere.

Parasites are considered the long-term solution to this mealybug infestation. The parasites are self-perpetuating: once released into an area and established, they persist even when the mealybug is at low population densities, and they continue to attack the mealybug, keeping populations below economic injury levels.

Recently, several parasites from China, Hawaii, and Egypt have been released in the Caribbean to control the PHM. Five months after releasing *Anagyrus kamali*, a parasite from China provided by the International Institute of Biological Control, USDA found an 80- to 90-percent reduction in population density of the PHM at release sites.

This parasite (fig. 7) lays an egg inside the mealybug adult. The egg hatches into a maggotlike larva that feeds internally on and kills the mealybug host. After pupating inside the mealybug's mummified body, the adult parasite chews an exit hole in one end of the mummy and emerges (fig. 8).

During their lifetime, *A. kamali* females are capable of laying a single egg inside 40–60 mealybugs. These parasites also kill mealybugs by piercing their bodies and feeding on their body fluids. *A. kamali* typically has a 15-day life cycle in tropical climates.



Figure 7—The parasite *Anagyrus kamali*, adult female (above) and adult male (below).



Figure 8—PHM mummies (one with exit hole of parasite).



Figure 9—The mealybug destroyer: the predaceous beetle *Cryptolaemus montrouzieri*, adult (above) and larva (below). Note the similarities between this larva and the adult pink hibiscus mealybug.



A predaceous beetle (fig. 9), *Cryptolaemus montrouzieri* Mulsant—sometimes called the redheaded ladybird beetle or the mealybug destroyer—is commercially available for use as a biological control agent. A voracious feeder on mealybugs, *C. montrouzieri* is capable of eating 3,000–5,000 mealybugs in various life stages during its lifetime. Because of their heavy wax coating, the larvae of this beetle are often mistaken for large mealybugs.

C. montrouzieri is considered a short-term solution to the mealybug pest problem and can be used if rapid control of a large mealybug population is necessary within a 6- to 8-week period. But these beetles can interfere with the parasites' effectiveness because the beetles will also feed on parasitized mealybugs.

What To Do

If you see this mealybug pest on plants (especially hibiscus) at your home, have any questions, or wish to report an infestation, please contact the nearest office of USDA's Animal and Plant Health Inspection Service, Plant Protection and Quarantine unit or your State department of agriculture.

